

ABSTRACT OF THE DISCLOSURE

Disclosed are PEALD (plasma-enhanced atomic layer deposition) apparatus and PEALD method for manufacturing a semiconductor device, the PEALD apparatus comprising: a housing including a reaction chamber in which a deposition reaction is performed; a rotary disk unit installed in the housing and provided with a plurality of susceptors for receiving wafers thereon so as to move the wafers; a gas spray unit mounted on the upper end of the housing above the rotary disk unit, and provided with first reactive gas sprayers, second reactive gas sprayers and inert gas sprayers on a lower surface of a circular disk for spraying respective gases into the housing; a gas feed unit connected to the gas spray unit for supplying first and second reactive gases and a purge gas into the housing; a gas exhaust port formed around the rotary disk unit; and a plasma generator for generating plasma to excite the second reactive gas.